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EXAMINER

SAVANI, AVINASH A

ART UNIT	PAPER NUMBER
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3749

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/540,695	Applicant(s) O'DONNELL ET AL.	
	Examiner AVINASH SAVANI	Art Unit 3749	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4-21,23-33 and 46-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4-21,23-33 and 46-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. The following action is in response to the applicant's Amendment dated 10/16/2009, that was in response to the Office action dated 7/20/2009. Claims 1, 41-21, 23-33 and 46-49 are pending, claims 1, 5, 15, 20 and 27 have been amended, while claims 46-49 are presented as new. All other claims remain as previously claimed.

Response to Arguments

2. Applicant should submit an argument under the heading "Remarks" pointing out disagreements with the examiner's contentions. Applicant must also discuss the references applied against the claims, explaining how the claims avoid the references or distinguish from them. Since no remarks have been received regarding the previously presented prior art, it is a contention of the examiner that the amendments given by the applicant are intended to define over the prior art. This assumption is not necessarily agreed upon by the examiner and therefore will be handled from amendment to amendment: previous claim rejections may or may not be maintained. In light of the amendment to claim 5, the previous 35 USC 102(b) rejection will be withdrawn, however a 35 103(a) rejection will be presented modifying Johnson ['269]

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 4, 13, 20, 21, 23-26, 46, 48 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sen-Yu [6659765], further in view of Rodgers [5520536].

6. With respect to claim 1, Sen-Yu discloses a gas burner (10) comprising: a) a burner body (12) including: i) a lower housing (22); ii) an element defining a combustion surface (26) attached to said lower housing; iii) a diffuser/reflector (80) positioned below said element [see FIG 2]; b) an inlet conduit (14) communicating with said burner body through which a gas/air mixture is delivered to said burner body in a region located below said diffuser/reflector [col 2, line 67, col 3, line 1-4]; and, c) said diffuser/reflector including a plurality of openings (87), each opening having an overhanging guide plate (86). Sen-Yu however does not disclose a set of these openings on the V-shape/arcuate of the diffuser/reflector, or a second plurality of openings not paired with the guides that are located in another region of the structure, forming unobstructed flow paths or the transverse dispersion of the mixture as further claimed. Rodgers et al teaches a similar device wherein there are multiple sets of openings (34) on an diffuser (30) [see FIG 2] said openings of said parallel rows being oriented to direct said gas/air mixture in a direction generally transverse to an axis of said inlet conduit [see FIG 4]. In

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view of Rodgers et al, the holes allow for a gas mixture to be distributed to a burner surface [col 4, line 16-23] wherein the orientation located on a sloped wall would inherently allow for among others, a transverse flow of a gas/air mixture. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have the diffuser/reflector with an inverted V shape and a second plurality of openings because the design was known in the art to allow for a proper distribution of a fuel, yielding the predictable result of optimum burner performance. Referring to figure 2 and 6, Sen-Yu displays an end of the deflector that has no apertures located in a region remote from the inlet.

7. With respect to claim 4, Sen-Yu discloses wherein the diffuser (80) is arranged in parallel and is understood to be formed of a stamped process, as this is a common process for shaping sheet metal.

8. With respect to claim 13, Sen-Yu discloses an improvement on infrared gas burners, commonly known for combusting fuel/air mixtures, wherein it is seen in figure 1 that the burner body is substantially rectangular in shape.

9. With respect to claim 20, Sen-Yu discloses a diffuser/reflector for use in a gas burner of the type that includes a burner body and a screen element attached to said burner body that defines a combustion surface and an inlet conduit for delivering a gas/air mixture to a region below said screen element [col 2, line 67, col 3, line 1-4];, said diffuser/reflector comprising a structure including a first plurality of openings (87); each opening of said plurality including a transversely extending overhanging element (86), said elements being arranged to reflect heat away from said lower housing and to

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encourage gas/air mixing as said gas/air mixture travels from said lower housing to said combustion surface, however does not disclose the said structure further including another plurality of openings or the transverse flow of the mixture. Rodgers teaches a similar device having a plurality of openings (34) located in another region of said structure, said other plurality of openings forming part of an unobstructed flow path for said .gas/air mixture to said combustion surface and said over hanging elements arranged to direct the flow of said .gas/air mixture in a transverse direction away from an axis of said inlet conduit [see FIG 4]. In view of Rodgers, there is a device wherein the orientation located on a sloped wall would inherently allow for among others, a transverse flow of a gas/air mixture. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have the diffuser/reflector with an inverted V shape and a second plurality of openings because the design was known in the art to allow for a proper distribution of a fuel, yielding the predictable result of optimum burner performance.

10. With respect to claim 21, Sen-Yu does not disclose that the structure is arcuate. Rodgers shows the structure being arcuate [see FIG 3]. In view of Rodgers, the structure is arcuate. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have an arcuate shaped structure because the technique was known in the art yielding the predictable result of distributing the heat in an arcuate direction to provide optimal heat distribution.

11. With respect to claim 23, Sen-Yu, the diffuser/reflector of claim 20 wherein said structure includes a non-apertured section that is positioned in said gas burner, such

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that it is located in a region of said gas burner that is remote from an inlet end of said gas burner [see FIG 2].

12. With respect to claim 24, Sen-Yu discloses the diffuser/reflector of claim 20 wherein said structure is rectangular in shape when viewed in plan and is intended to fit within a rectangularly shaped burner housing [see FIG 2].

13. With respect to claim 25, Sen-Yu discloses the diffuser/reflector of claim 20 wherein said openings and overhanging elements are arranged, such that they form a stair cased profile [see FIG 2]

14. With respect to claim 26, Sen-Yu does not disclose that the structure is inverted V-shaped. Rodgers shows the structure being inverted V-shaped [see FIG 3]. In view of Rodgers, the structure is inverted V-Shaped. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have an inverted V-shaped structure because the technique was known in the art yielding the predictable result of distributing the heat in an arcuate direction to provide optimal heat distribution.

15. With respect to claim 46, Sen-Yu discloses the gas burner of claim 1, however does not disclose the openings as further claimed.

16. With respect to claim 48, Sen-Yu discloses the gas burner of claim 1, however does not disclose the transverse dimension as further claimed. Rodgers teaches a similar device wherein said openings of said parallel rows are arranged in first and second sets and direct said gas/air mixture in first and second transverse directions respectively, said first transverse direction being substantially opposite the second transverse direction [see FIG 4] and wherein said lower housing is generally rectangular

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in shape and has a transverse dimension that is less than its longitudinal dimension, the transverse dimension being transverse to said axis of said inlet conduit [see FIG 4]. In view of Rodgers, the sloped opposite walls would inherently allow for a transverse flow of a gas/air mixture. It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide the openings as claimed because the arrangement was known in the art, yielding the predictable result of allowing a wider dispersion of combustible mixture to provide a more stable flame.

17. With respect to claim 49, Sen-Yu disclose the diffuser/defflectore of claim 20, however does not disclose transverse openings as further claimed. Rodgers teaches a similar device wherein said transversely extending overhanging elements are arranged in first and second sets, one of said sets directing the gas/air mixture in a first transverse direction away from said axis of said inlet conduit, the other set of said elements directing said gas/air mixture in a second transverse direction from said axis of said inlet conduit, said first and second transverse directions being substantially opposite each other [see FIG 4]. In view of Rodgers, the sloped opposite walls would inherently allow for a transverse flow of a gas/air mixture. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have the opposite flows as claimed because the arrangement was known in the art at the time of the invention, yielding the predictable result of providing greater gas/air dispersion for more optimum burning.

18. Claims 5, 6-10, 14, 16 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson [3312269], further in view of Rodgers et al ['536].

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19. With respect to claim 5, Johnson et al discloses: A gas burner (12) comprising: a) a burner body (10) including: i) a lower housing [see FIG 1]; ii) an element defining a combustion surface (14) attached to said lower housing; b) an inlet conduit (16) communicating with said burner body through which a gas/air mixture is delivered to said burner body in a region located adjacent an inside surface of said combustion surface defining element [col 6, line 4-7]; and, c) said combustion surface defining element being radiused and including a plurality of integrally formed rigidizing ribs (22) [see FIG 1], however does not disclose the inside surface exposed to uncombusted gas/air mixture. Rodgers teaches a similar device wherein said combustion surface defining element having said inside surface exposed to uncombusted gas/air mixture, said gas/air mixture being combusted on said combustion surface defining element and outside said burner body region [col 4, line 21-23]. In view of Rodgers, the holes (34) allow gas/air to be directed to a region outside of the burner body for combustion. It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a combustion surface outside a burner body because the arrangement was known in the art, yielding the predictable result of providing proper dispersion for optimum combustion.

20. With respect to claims 6, Johnson discloses the burner as claimed with a lower housing [see FIG 1] however does not further clarify the design of the lower housing

21. With respect to claim 7, Johnson discloses the burner as claimed with a lower housing [see FIG 1] however does not disclose the flanges as claimed.

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22. With respect to claim 8, Johnson discloses the burner as claimed with a lower housing [see FIG 1] however does not disclose the channel as claimed.

23. With respect to claim 9, Johnson discloses the burner as claimed with a lower housing [see FIG 1] however does not disclose the end caps as claimed.

24. With respect to claim 10, Johnson discloses the burner as claimed with a lower housing [see FIG 1] however does not disclose the aperture as claimed.

25. With respect to claim 16, Johnson discloses the burner as claimed with a lower housing [see FIG 1] however does not disclose the end cap as further claimed.

26. With regard to claims 6-10 and 16, Johnson discloses the burner, however Rodgers et al teach a similar burner that describes the lower housing (22) as fully claimed [see FIG 2]. As can be seen from figures 2 and 3, the lower housing (22) has flanges (44) that receive an edge of the burner surface (62), thereby securing the two elements, the flanges are oriented in a tangential relationship, the lower housing has a channel member that has upwardly directed sides (26) wherein these flanges define an upper edge, wherein the lower housing has end caps (48) having arcuate flanges [see FIG 2] securing the combustion surface [see FIG 3], and the end cap has an aperture (14) for receiving an inlet conduit. The end cap also has the axial flange capable of securing the inlet tube. The inlet tube of Johnson is seen to be tightly fit within the burner body, thereby implying a securing means on the tube that engages the flanges of the lower body. In view of Rodgers et al, the housing of the burner body has means for securing elements of the burner together. It would have been obvious to a person of ordinary skill in the art at the time of the invention to arrange the housing as claimed

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because the design was known to one of ordinary skill, showing a common design choice and yielding the predictable result of a leak proof burner body.

27. With respect to claim 14, Johnson discloses a combustion surface (14) comprising a screen [see FIG 1], however does not disclose the specific material of the screen. Johnson does teach the sheet material of high temperature and thermal conductivity [col 1, line 40-55]. Johnson teaches of various alloys that form a weave/grid structure. In view of Johnson, the combustion surface has the same capabilities of the steel alloy wire cloth. It would have been obvious to a person of ordinary skill in the art at the time of the invention to use the wire cloth because the knowledge of materials capable of sustaining high temperatures would be within their skill level, yielding the predictable result of choosing any alloy capable of the required characteristics to provide a suitable combustion surface.

28. With respect to claim 49, Johnson discloses the gas burner of claim 5 wherein said rigidizing ribs are oriented in a direction that is substantially transverse to an axis of said inlet conduit [see FIG 1].

29. Claims 11 and 12 rejected under 35 U.S.C. 103(a) as being unpatentable over Sen-Yu ['765], in view of Rodges['536], [further in view of Kaneko [JP60175913].

30. With respect to claim 11, Sen-Yu discloses the burner of claim 1, however does not disclose the discharge end as claimed.

31. With respect to claim 12, Sen-Yu discloses the burner of claim 11, however does not disclose the discharge end as claimed as further claimed.

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32. With regard to claims 11 and 12, Sen-Yu discloses the burner as claimed, having an inlet conduit (14) extending into an interior region of the body [see FIG 1], however does not disclose the discharge end being cut at an angle of 45°. Referring to the figure in the Japanese patent to Kaneko, it is seen that the inlet tube (3) has a discharge that is cut at a 45° angle. In view of Kaneko, the gas inlet tube has an angled discharge end. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have a discharge end angled because the design was known in the prior art.

33. Claims 15, 17-19 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCall [6439171], further in view of Schutte [3997287].

34. With respect to claims 15, McCall discloses: A gas burner for use in a water heater, said water heater including a wall at least partially defining a combustion chamber and an access opening in said wall, comprising: a) a burner body including a lower housing and an element defining a combustion surface (28) that is attached to said lower housing [see FIG 2]; b) an inlet conduit (22) communicating with said burner body through which a gas/air mixture is delivered to said burner body in a region located below said combustion surface defining element [col 3, line 41-45]; and, c) an access door/bulkhead (10) for closing off said access opening when said burner is in its installed position within said water heater, said access door secured to an inlet end of said inlet conduit [col 3, line 33-37]; d) said inlet end of said inlet conduit including an upset ridge (18) that abuts an inside surface surrounding an opening in said door through which said inlet conduit extends and an outwardly extending flare that abutably

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engages an outside surface of said door, whereby said door is secured to said inlet conduit [see FIG 3, col 4, line 11-21]. McCall however does not disclose the premix burner. Schutte teaches a similar device wherein a combustible gas and combustion air is delivered to a burner body [col 2, line 19-27] and an inlet conduit supplies at least 100% of the combustion air needed for combustion of said combustible gas [col 2, line 63-68]. In view of Schutte, McCall can be modified to provide a premix burner. It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a premix burner because it was known that providing combustion air to a burner greatly increases efficiency, yielding the predictable result of obtaining a desired burner temperature with easy control.

35. With respect to claims 17-19, McCall discloses the burner as claimed, however does not disclose the various design aspects as claimed in 17-19, which are deemed to be of design choice and not criticality since no advantage is given of the design choice. There is a mounting structure that attaches a gas orifice that is distanced away from the inlet end of (22) (refer to the attachment means of the tubes making up the conduit 22), and it is seen that a predetermined shape is used for the mounting of the conduit to the door. There is a gasket (32) used to mount the door assembly that forms a part of the burner body, and the use of flanges would allow for a same sealing means. It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide such as design, because similar arrangements were used thereby demonstrating design choice, not one of criticality.

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36. With respect to claim 27, A gas burner for use in a water heater, said water heater including a wall at least partially defining a combustion chamber and an access opening in said wall, comprising: a) a burner body including a lower housing and an element defining a combustion surface (28) that is attached to said lower housing [see FIG 2]; b) an inlet conduit (22) communicating with said burner body through which a gas mixture is delivered to said burner body in a region located below said combustion surface defining element [col 3, line 41-45]; and, c) a bulkhead/access door (10) for closing off said access opening when said burner is in its installed position within said water heater, said bulkhead/access door secured to an inlet end of said inlet conduit [col 3, line 33-37]; d) said inlet end of said inlet conduit being secured to said bulkhead/access door in a region defining a mounting location having a predetermined profile that corresponds to said inlet end of said inlet conduit but that is unrelated to the radius of said access opening [see FIG 2]. McCall however does not disclose the premix burner however. Schutte teaches a similar device wherein a combustible gas and combustion air is delivered to a burner body [col 2, line 19-27] and an inlet conduit supplies substantially all combustion air needed for combustion of said combustible gas [col 2, line 63-68]. In view of Schutte, McCall can be modified to provide a premix burner. It would have been obvious to a person of ordinary skill in the art at the time of the invention to provide a premix burner because it was known that providing combustion air to a burner greatly increases efficiency, yielding the predictable result of obtaining a desired burner temperature with easy control.

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37. Claims 28-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over McCall ['171], Schutte ['287], further in view of Joyce [5340305].

38. With respect to claims 28-32, McCall discloses the gas burner as claimed, however does not disclose various design features of the element. Joyce teaches a similar burner with the components as claimed making an obvious combination of elements. Joyce teaches a burner (1) having an inlet conduit (3) wherein the upset ridge is present and is understood to be the area from which the flare (12) extends [see FIG 1]. The mounting structure (11) has legs and secures an end of the inlet and has a mounting structure for a gas orifice (10) and has an extending lip that is understood to be analogous to the deflecting tab. McCall discloses the rodent shield as can be seen in the figures. In view of Joyce, the burner has mounting means for a gas orifice and a mounting means to mount the inlet to a door structure. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have such an arrangement because it was known that the mounting means would allow for proper installation of the components of the burner to the water heater.

39. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over McCall ['171], in view of Schutte ['287], further in view of Rodgers [5791298].

40. With respect to claim 33, McCall discloses the burner of claim 27, except does not disclose a combustion chamber including ports for admission of secondary air. Rodgers et al teaches a similar device wherein the combustion chamber (20) has secondary ports (49) for the admittance of air into the combustion chamber [col 5, line 29-39]. In view of Rodgers, there is a means for additional air into the combustion

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chamber. It would have been obvious to a person of ordinary skill in the art at the time of the invention to have a combustion chamber with secondary airports because the technique to do so was known, yielding the predictable result of an additional supply of combustion air to provide a more efficient burner and prevent vibrations due to pressure build up.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AVINASH SAVANI whose telephone number is (571)270-3762. The examiner can normally be reached on Monday- Friday, alternate Fridays off, 7:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Avinash Savani/

/Steven B. McAllister/

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Examiner, Art Unit 3749

Supervisory Patent Examiner, Art Unit 3749

/A. S./

12/21/2009